WHAT IS CLAIMED IS:

1. A method for providing fault tolerance in a VLAN having a topology defined by a spanning tree having a root node and at least one leaf node, the root and leaf nodes interconnected by connections in a connection-based network, the method comprising:

    sending from a first node in a connection used by the VLAN, in a leaf-to-root direction a series of continuity checking packets;

    detecting the continuity checking packets at a second node in the connection wherein the second node is located between the first node and the root node; and,

    generating a request for a change in the topology of the VLAN in response to not receiving one or more continuity checking packets at the second node.

2. The method of claim 1 comprising generating a connection rerouting request in response to the request for a change in the topology of the VLAN.

3. The method of claim 1 wherein generating a request for a change in the topology of the VLAN comprises generating a topology change notification.

4. The method of claim 1 wherein the first node is at a leaf of the spanning tree.

5. The method of claim 4 wherein the second node is at a root of the spanning tree.

6. The method of claim 1 wherein the connection-based network comprises an ATM network and sending a series of continuity checking packets comprises sending a series of OAM cells.

7. The method of claim 6 wherein sending a series of OAM cells comprises sending OAM cells at intervals in the range of 1/10 second to 5 seconds.

8. The method of claim 7 wherein the intervals are in the range of ½ second to 2 seconds.

9. The method of claim 1 comprising monitoring a time elapsed since receipt of a continuity checking packet at the second node and generating the request for a change in the topology of the VLAN if the time elapsed exceeds a threshold.

10. The method of claim 1 comprising monitoring a number of continuity checking packets received at the second node within a time window and generating the request for a change in the topology of the VLAN if the number of continuity checking packets received at the second node is less than a threshold number.

11. The method of claim 1 also comprising sending continuity checking packets from the root node to one or more leaf nodes of the spanning tree and detecting the continuity checking packets at the one or more leaf nodes of the spanning tree.

12. A method for providing fault tolerance in an ethernet VLAN comprising a plurality of ethernet segments connected to an ATM network by

bridges and an ATM virtual circuit extending between a first one of the bridges and a second one of the bridges, the method comprising:

configuring nodes at first and second ends of the virtual circuit respectively to source and sink OAM continuity checking cells;

sending from a source port at the first end of the virtual circuit OAM continuity checking cells at a specified rate;

receiving the OAM continuity checking cells at a sink port at the second end of the virtual circuit; and,

generating a request for a change in the topology of the VLAN in response to the sink port determining that it has not received a number of the OAM continuity checking cells.

13. The method of claim 12 comprising generating a signal to trigger a soft permanent virtual circuit reroute in response to the request for a change in the topology of the VLAN .

14. The method of claim 12 wherein generating a request for a change in the topology of the VLAN comprises generating a spanning tree protocol topology change notification.

15. The method of claim 14 wherein generating a request for a change in the topology of the VLAN comprises sending a BPDU to a node of the VLAN.

16. The method of claim 14 wherein generating a request for a change in the topology of the VLAN comprises sending a BPDU to a root node of the VLAN.

17. The method of claim 12 wherein the sink port is at a root node of the VLAN, the source port is at a leaf node of the VLAN and the OAM continuity checking cells travel over the connection in a leaf-to-root direction.

18. The method of claim 12 wherein the VLAN comprises a plurality of segments interconnected in a topology defined by a spanning tree protocol having a root at the second end of the virtual circuit and a leaf at the first end of the virtual circuit.

19. The method of claim 12 comprising determining that the sink port has not received a predetermined number of the OAM continuity checking cells by determining that a time elapsed since receipt of a most recently received one of the OAM continuity checking cells exceeds a threshold time.

20. A method for rerouting a connection in a connection-based network, the connection carrying data traffic between ethernet segments of a VLAN, the method comprising:

    configuring nodes at first and second ends of the connection respectively to source and sink continuity checking packets;

    sending continuity checking packets at a specified rate from the node at the first end of the connection;

    receiving the continuity checking packets at a packet sink at the node at the second end of the connection;

    generating a request for a change in the topology of the VLAN in response to the packet sink not receiving a predetermined number of the continuity checking packets;

generating a reroute signal for the connection in response to the request for a change in the topology of the VLAN; and,

rerouting the connection through the connection-based network in response to the reroute signal.

21. The method of claim 20 wherein the connection-based network comprises an ATM network and the continuity checking packets comprise OAM cells.

22. The method of claim 20 wherein the VLAN comprises a plurality of segments interconnected in a topology defined by a spanning tree protocol having a root at the second end of the connection and a leaf at the first end of the connection.

23. The method of claim 22 comprising determining that the cell sink has not received a predetermined number of the OAM cells by determining that a time elapsed since receipt of a most recently received one of the OAM cells exceeds a threshold time.

24. The method of claim 23 wherein the connection comprises a soft permanent virtual circuit and the reroute signal comprises a VC reroute signal.

25. A virtual LAN having a topology, the virtual LAN comprising:

a plurality of network segments each bridged to a connection-oriented network;

a plurality of connections in the connection-based network, the connections interconnecting the plurality of network segments;

a packet source located on a first one of the connections, the packet source configured to generate and send on the connection temporally spaced apart continuity checking packets in a direction toward a root of the spanning tree;

5   a packet sink located on the first one of the connections at a location between the packet source and the root of the spanning tree, the packet sink configured to receive the continuity checking packets and to generate a request for a change in the topology of the VLAN in response to not receiving one or more of the continuity checking packets sent by

10   the packet source.

26.   The virtual LAN of claim 25 wherein the topology is defined by a spanning tree.

15   27.   The virtual LAN of claim 26 wherein the connection-based network comprises an ATM network.

28.   The virtual LAN of claim 27 wherein the packet source is configured to generate and send OAM cells and the packet sink is configured to

20   receive the OAM cells.

29.   The virtual LAN of claim 26 wherein the packet source is associated with a timer and the packet source is configured to generate and send the OAM cells at equally spaced-apart times.

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30.   The virtual LAN of claim 29 wherein the packet sink is associated with a timer and the packet sink is configured to generate the request for a change in the topology of the VLAN when a time longer than a

threshold time has passed since the packet sink has received one of the OAM cells.

31. The virtual LAN of claim 26 comprising, on each of a plurality of the connections:

a packet source configured to generate and send continuity checking packets at intervals to a corresponding packet sink located on the one of the plurality of the connections at a location between the packet source and the root of the spanning tree, the packet sink configured to receive the continuity checking packets and generate the request for a change in the topology of the VLAN in response to determining that a number of the continuity checking packets sent by the corresponding packet source have not been received.

32. The virtual LAN of claim 31 wherein the spanning tree comprises a plurality of leaves and one of the packet sources is located at each of the leaves of the spanning tree.

33. The virtual LAN of claim 32 wherein packet sinks corresponding to the packets sources located at the leaves of the spanning tree are located at the root of the spanning tree.

34. The virtual LAN of claim 33 comprising a VLAN-level fault tolerance mechanism wherein the packet sink is configured to trigger the VLAN-level fault tolerance mechanism in response to not receiving one or more of the continuity checking packets sent by the packet source.

35. The virtual LAN of claim 33 wherein the root of the spanning tree is located at a bridge and the bridge generates and sends bridge protocol data units to other bridges located at the leaves of the spanning tree.

36. A method for providing fault tolerance in a VLAN having a topology, the VLAN comprising a plurality of segments interconnected by connections in an ATM network the method comprising:

at a cell source on one of the connections generating a series of continuity checking cells;

at a cell sink on the one of the connections receiving the continuity checking cells;

determining that a number of the continuity checking cells sent by the cell source have not been received at the cell sink;

generating a fault indication in response to determining that a number of the continuity checking cells have not been received at the cell sink; and,

triggering a change in the topology of the VLAN in response to the fault indication.